MAGNETIC SCAFFOLD ANCHOR POINT SAV 551.01-1400

User Manual and Safety Instructions

3625896 Version: 1.3

Version control:

Number	Changes	By	Date
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1.1	Cover page: article number and document number added 1. Scope of delivery changed 2. Photos 1+2 and related text changed, patent number added 3.5 Comment on rubber magnets added 3.9 Comment on safety line inserted 3.16 Comment on qualified staff inserted 4. Photos 3+4 changed 4.7. Figure 2 replaced by photo 7, photo no. 7-11 changed to 8-12 4.7.b Test measurement value in non-loaded condition added. 4.9 Photos 12+13 and their numbers changed 4.24 Figure 3 replaced by photo 15 5. Maintenance added 6. Drawing changed to latest version	B. Gravendeel E. Nieuwenhuizen	14-11-2014
1.2	2. Photo 2 and text position changed, picture of text plate added 3. Warning logos for pacemaker, safety boots, hard hat, risk of entrapment and hoisting ban added. 3.19 “as hosting magnet” added. 4.2 Figure 1 changed. 4.4 Figure 2 added. 4.7 Temperature for use of sensor and reading unit added. 4.9 Photo shear force tester and text changed 4.12 Description of procedure changed. 4.17 Text changed 4.23 Storing console added. 4.25 Comment ring bolt inserted 4.26 Use of console prescribed 6. Table and graphs: forces in kgf Text added: 1 kgf equals 1 daN. 8. Sample measurement sheet added.	E. Nieuwenhuizen B. Gravendeel	19-12-2014
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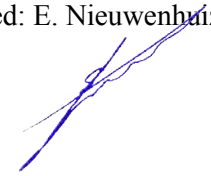
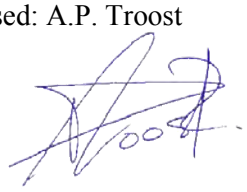
Prepared: E. Nieuwenhuizen	Verified: B. Gravendeel	Released: A.P. Troost
		

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1. Introduction

Thank you for purchasing our product.
This document describes the operation of the McNetiq-Controlock magnetic scaffold anchor point as well as the testing tools to be used. This manual contains all information that is necessary for optimum and safe operation of the McNetiq-Controlock. Always store this manual in the storage chest together with the measuring tools and the operating wrench. You can make a copy for your archive.

WARNING
Always **read** this manual before using the equipment
Use the scaffold anchor point only after fully understanding the manual.

Upon delivery, check that the product is complete and undamaged. Immediately contact the supplier if the product is damaged or incomplete.

WARNING
Never use a damaged, incomplete or defective product!

The delivery consists of the following:
- Switchable magnet type SAV 551.01-1400 with handles
- Test certificate of the magnet
- Manual

The following products must be used for proper operation of the magnet (available separately):
- 1 Ratchet wrench with extension and adapter (for switching the magnet on and off)
- 1 Magnetic console and spirit level (for placement of the magnet)
- 1 Unit with load force tester (for testing the Pull force)
- 1 Shear force tester (for testing shear force)
- 1 Reading cabinet AE (for reading the pull force and shear force)
- 4 Nylon safety lines with 2 snap hooks each (fall protection for magnet, console and force testers)

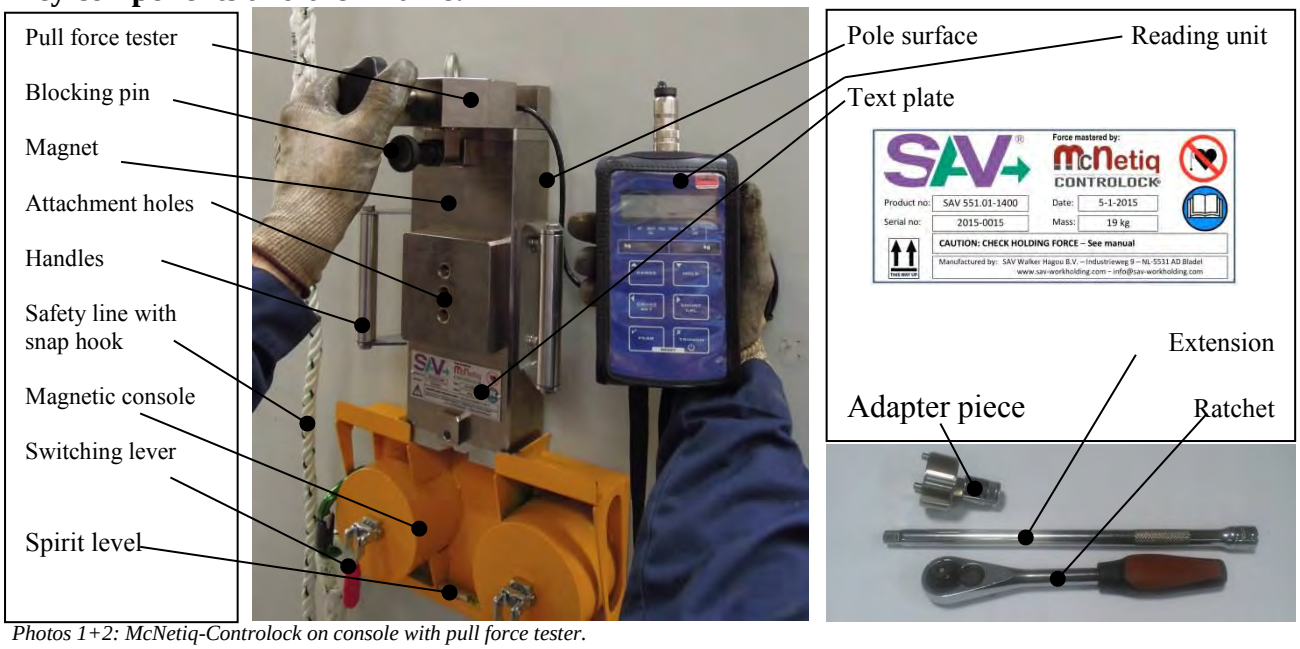
Optional:
- 1 M12 ring bolt (for attachment to scaffold)
- 1 Protective guard (for protection of the magnet)

Warranty
The warranty term for these products is 1 year after delivery. Warranty is void:
a. if the operation and maintenance instructions are not observed or if the product is used in an abnormal manner
b. in case of normal wear and tear
c. in case of changes or repairs not performed by the manufacturer or an authorised workshop and/or performed without prior written permission of the manufacturer.

For further information, please refer to the general delivery conditions.
Always include the data found on the product's type plate in any communication.

2. Operation

Key components and their name:



Photos 1+2: McNetiq-Controlock on console with pull force tester.

The McNetiq-Controlock consists of a manually switchable three-pole magnet and two testing tools for verifying that the scaffold anchor point is attached with the required force. There is a testing tool for **pull force** and a testing tool for **shear force**.
These testing tools are of vital importance. They check if the McNetiq-Controlock actually meets the specified required values.
The McNetiq measurement method is patented (patent no. EP2783730).
The measured values can be written down and archived on a measurement sheet. This measurement sheet is project-dependent. See the sample on page 13.
The McNetiq-Controlock is fully nickel-plated to prevent rust.

Optimising the magnetic force

The holding force of the magnet depends on:
- The "**Air gap**" between the steel wall; the bigger the air gap, the lower the force
- **Thickness of the material**. The magnet achieves its designed force when the material is 10 mm thick; the force will be less with thinner material
- **Type of steel.** The normal force is based on low-alloy, low-carbon steel, e.g. S 235 JR (St 37). Higher carbon content and more alloying will result in a lower force
- **Size of the contact surface.** The pole surface of the magnet must, of course, be fully covered and - with thinner materials in particular - there must be sufficient steel surface around the magnet to generate the required force. Rule of thumb for 3-pole magnets: length + width plus 2x the width of the magnet (=420x240 mm). Close to the edge of an object the force will be less than in the middle. The impact of this will be higher with thinner steel.
- **Temperature.** The designed force is achieved at a temperature of 20°C. At higher temperatures the force will reduce by just under 0.3% per degree. The maximum temperature is 80°C, which equals a force reduction of about 16%.

Also see the technical data on page 11.

Air gap: anything between the magnet and the steel surface that is not magnetic, such as paint, dirt, any roughness or unevenness, rust, etc.

3. Safety

Warning: Incorrect operation or actions may cause bodily injury or damage to the equipment.

Intended use

Switchable, permanent magnet with accessories for placement of a (scaffold) anchor point on steel walls. Magnet and tools must be used together.

Safety Instructions

1. Individuals with a pacemaker or other medical implants that are sensitive to magnetic fields must only use the magnet after verifying that there is no risk.
2. Never work on your own.
3. Always wear safety boots, a hard hat and safety gloves.
4. Check the McNetiq-Controlock, the console, the sensor, the test tools and the wrench for damage. Never use damaged parts.
5. Replace the rubber magnets of the console if they are damaged.
6. Never remove warning or instruction plates from the magnet.
7. Never start using the McNetiq-Controlock before you have fully read and understood the manual. In case of doubt: ask the manufacturer.
8. Never use the McNetiq-Controlock, the console or the test tools without correctly installed fall protection.
9. If the magnet has dropped and the safety line has been stressed, the line must be replaced.
10. Always clean the pole surfaces of the McNetiq-Controlock before use.
11. Always follow the full placement and test procedures.
12. Never place the magnet without using the console.

13. Only switch the magnet on after it has been placed against a metal wall.
14. Never place your hand in between the magnet and the wall while switching it on.
15. Never use the magnet before testing that the pull force and shear force are OK.
16. Measurements must only be performed by qualified staff; SAV Walker Hagou offers training for this.
17. After placement, always remove the wrench from the magnet.
18. Never interrupt the test procedure; always complete the test.

19. Never use the magnet as a lifting magnet for transporting loads.
20. The temperature of the magnet must not be over 80°C for a prolonged time.

4. Use

Placing the console and the magnet on the wall:

1. All parts must be attached to the scaffolding with a safety line.
2. The console is magnetically attached to the wall.

Make sure that all surfaces are clean; clean the magnets and the wall. Remove any unevenness.

Before placement, the red levers must point upward. Use the spirit level at the lower side of the console to horizontally align the system and then switch the magnet on by turning the small levers down.
Check if the console is properly attached by pulling it with both hands.

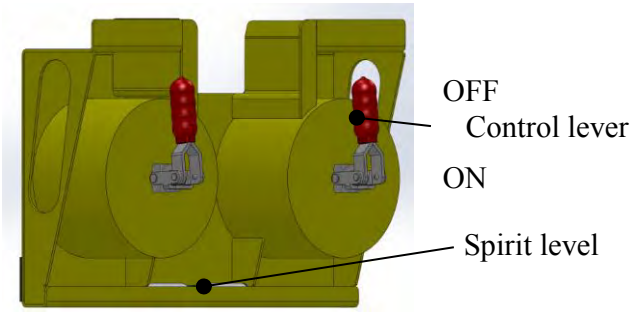


Figure 1: console with spirit level

Photo 3: console activated (ON)

3. Make sure that all contact surfaces are **clean**; clean the underside of the McNetiq-Controlock as well as the wall. Remove any unevenness.

4. Connect the safety line to the McNetiq-Controlock and place it on the console.

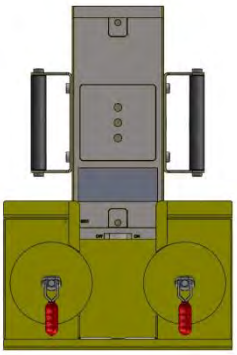


Photo 4/Figure 2: placing the McNetiq-Controlock

5. Activate the McNetiq-Controlock with the special socket wrench (see Photo 5). Turn it clockwise until the magnet snaps into locked position. It should be turned just under half a turn. The magnet is now attached to the wall.

⚠ Check with both hands if the magnet is securely fastened.

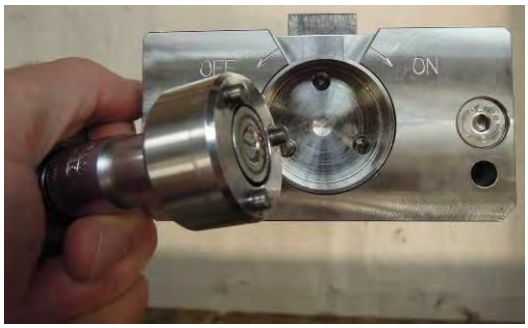


Photo 5: special socket wrench

6. **Removing the console:**
Take hold of the console with both hands and use your thumbs to turn the levers up. Store the console safely.

Photo 6: removing the console

7. **Testing the pull force**
Connect the safety line to the **pull force tester** and place it on top of the McNetiq-Controlock. Insert the two pins of the tester into the opening at the top end of the magnet. If necessary, turn the handle back to retract the pin at the bottom of the tester as much as possible. Insert the pins fully into the openings and lock using the locking pin.

Photo 7: McNetiq-Controlock with tester

⚠ **Operating temperature for the sensor and the reading unit: -10 to 50°C.**

a. Secure the reading unit and connect it to the sensor. Consult the **measurement sheet**.

b. Press the button TROUGH (4a) for a couple of seconds. When a number (about 1..2 kg) appears on the display, the equipment is ready for use.
Verify that the value on the display is ≤ 0.5 kg when the sensor is not loaded. If this is not the case, consult the manual of the measuring device; there may be a break in the cable or a loose strain gauge.

c. Press the button GROS-NET (4b). The indicator appears above NET. The value on the display is now zero.

d. Turn the handle on the tester clockwise to generate force. Turn the handle until the display reaches half the required force in kgf specified on the measurement sheet. For example: for 400 kgf, the required force is 196 kgf.

e. Note down the achieved pull force on the measurement sheet.

f. Switch the reading unit off by pressing the button TROUGH (4a) for a couple of seconds.

Photos 8 to 12: using the tester and reading unit

8. The handle on the tester is turned back to remove the test force. Turn the handle to retract the pin at the bottom of the sensor as far as possible.

The vertical force on the wall has now been tested and meets the required value for this location.

9. Remove the tester from the McNetiq-Controlock: Remove the blocking pin, lift up the tester and store it in a safe place.

Photo 13: removing the tester

The picture below shows the test unit used to verify the correct **shear force**.

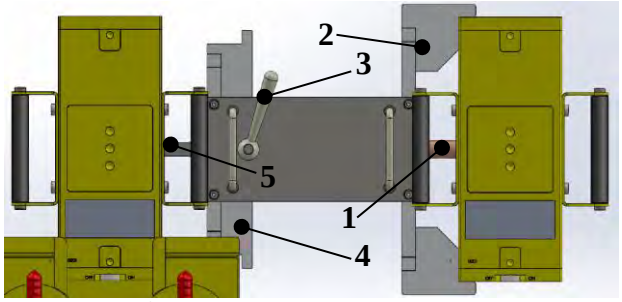


Figure 3: shear force test unit

Components:

1. sensor pin
2. anchor point fork
3. lever
4. counter magnet fork
5. counter magnet support pin

The test unit consists of two forks that each fit around a McNetiq-Controlock. The fork with the movable sensor pin (1) is called the anchor point (2). The other fork, with the fixed support pin (5) rests against the counter magnet; it is also the support for placing the console. The lever (3) is attached to an eccentric disc. Turning the lever (3) drives out the sensor pin against the magnet that is being tested. As the lever (3) is turned further, the pressure between the two magnets increases; this pressure is measured by a sensor. Half a turn of the lever matches a full move of the sensor pin.

10. Turn the lever (3) to the position in which the sensor pin (1) is retracted as far as possible.
11. Attach the safety line and position the test unit with the anchor point fork (2) against the anchor magnet. The 3 magnets at the lower end ensure that the test sheet sticks to the wall. Clean the wall to ensure proper adhesion.
12. Attach the safety line and position the console against the support of the counter magnet fork (4) as shown in figure 3.
    Position the counter magnet.
    Switch the counter magnet on.
    ⚠ Check with both hands whether the magnet is securely fastened.
13. Connect the reading unit to the sensor. Consult the **measurement sheet** (see also 7a to f).
14. Switch the reading unit on by pressing the button TROUGH for a couple of seconds. (See also
15. Press the button GROS-NET. The indicator appears above NET. The value on the display is now zero.
16. Turn the lever (3) until the required force (see MEASUREMENT SHEET) is reached.
17. Note down the achieved shear force on the measurement sheet.
18. Turn the lever (3) back to retract the sensor pin (1).
19. Press the button GROS-NET. The indicator above NET disappears.
20. Switch the reading unit off by pressing the button TROUGH for a couple of seconds.
21. Unscrew the reading unit.
22. Remove the counter magnet and store it in a safe place.
23. Remove the console and store it in a safe place.
24. Remove the test unit. Store it in a safe place.

Testing is successful if the tests of both pull force and shear force succeed. This confirms that the McNetiq-Controlock meets the requirements for pull force and shear force.

25. An M12 ring bolt, quality 8.8, can be used for attachment of the magnet to the scaffold. The advised length is 50 mm. The ring bolt must be mounted properly and professionally.

Place the protection guard over the magnet, if necessary. The guard is magnetically attached. Although not required for proper operation, use of these guards is highly recommended. The guard protects the McNetiq-Controlock against steel grit, ferrous dust and UV radiation.
During storage, the guard can also be used to protect the poles of the magnet against damage.

Photo 15: magnet with protective guard

26. The console must be used for removing the magnet. See 4.2.

5. Inspection and Maintenance

Prior to every use:
Check the McNetiq-Controlock anchor points for damage and contamination to the magnet poles. In case of doubt: ask the manufacturer.

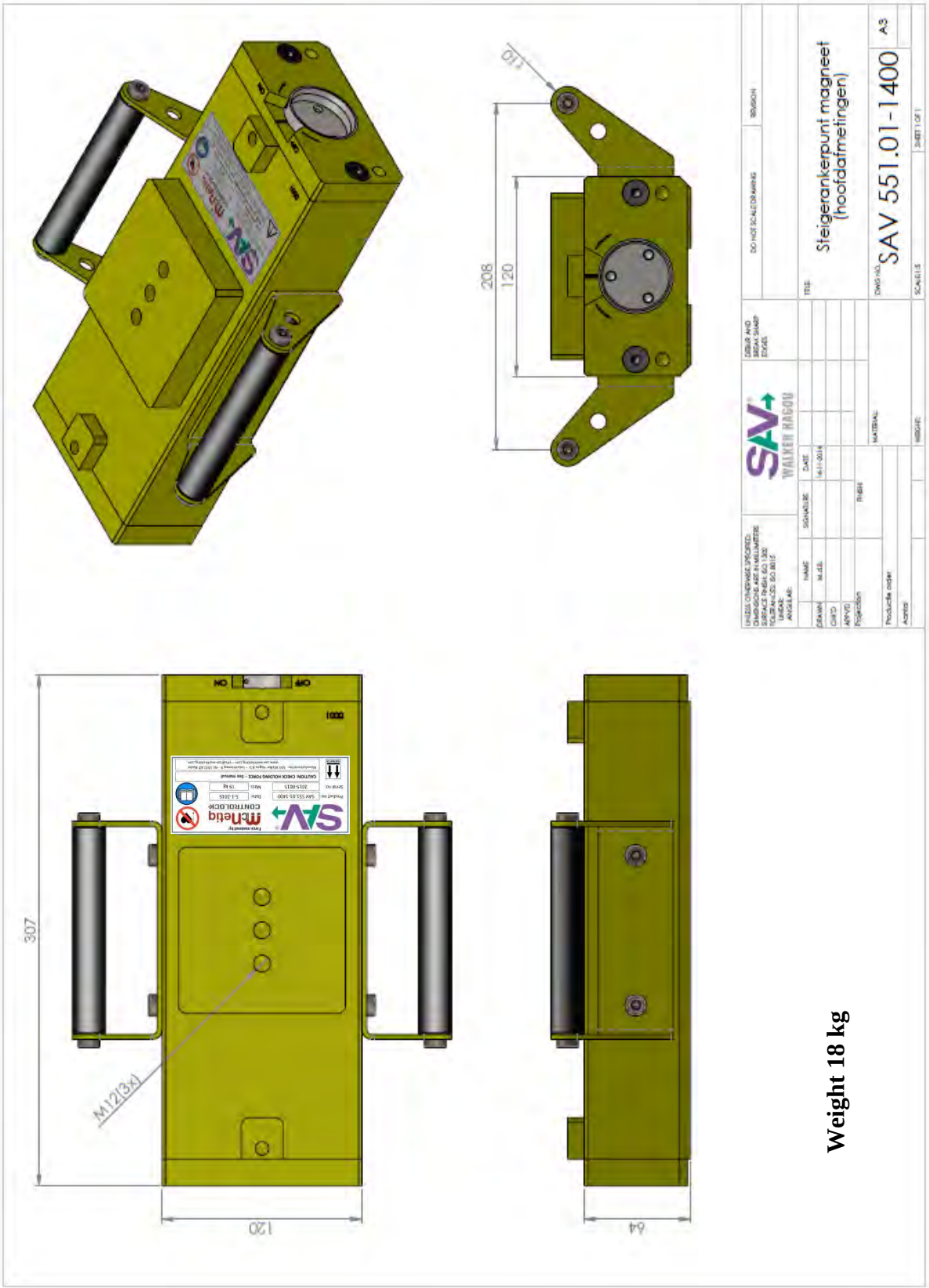
Keep the open threaded holes in the magnet well greased in order to prevent rust.

Once per year:
Have the McNetiq-Controlock and parts checked by SAV Walker Hagou BV in Bladel, the Netherlands.

Both measurement sensors must be checked and gauged annually.

The pull force tester and the shear force tester must be checked annually for proper operation.

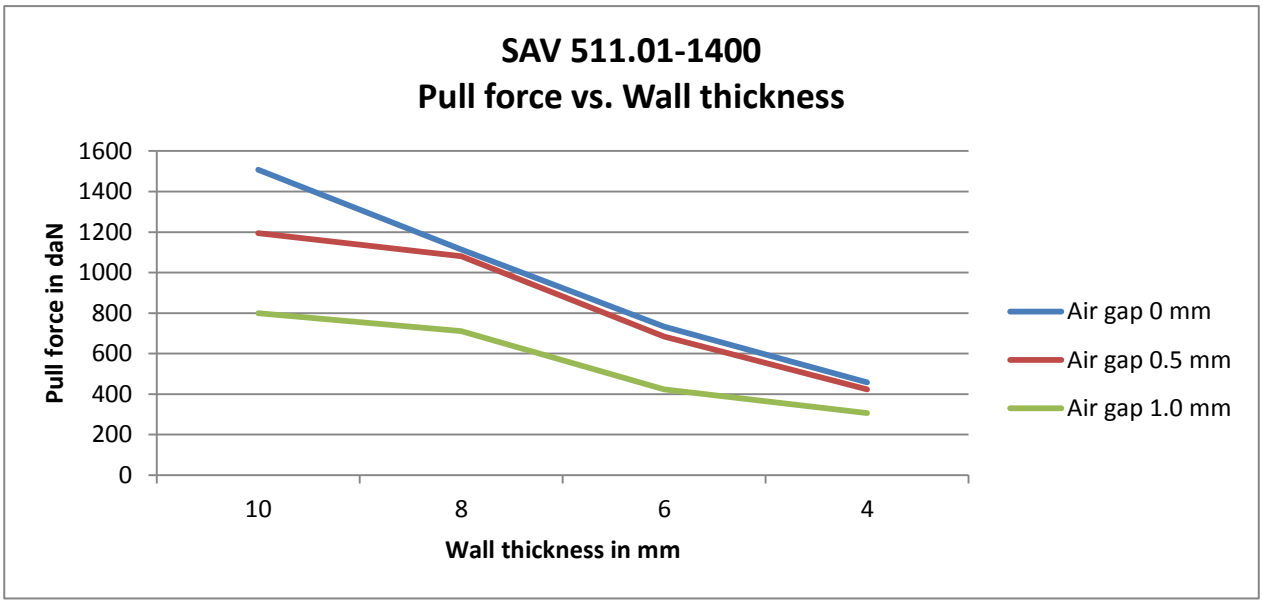
6. Technical Specifications and Drawings

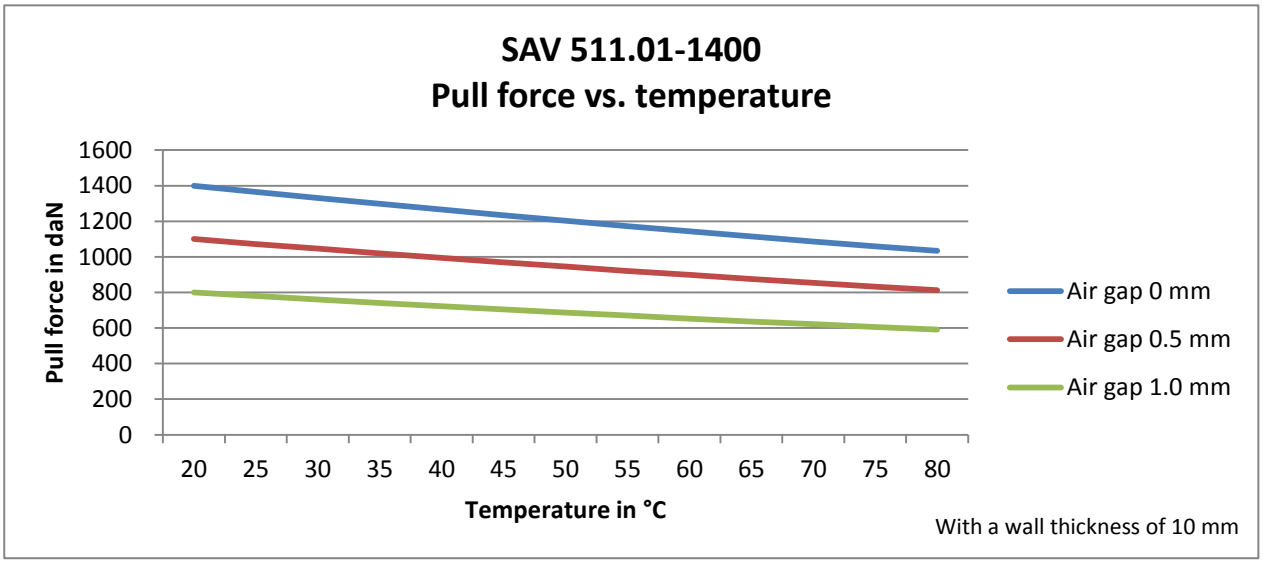


Pull force and shear force:

Air gap in mm	Pull force in kgf	Shear force in kgf
0	1400	545
0.5	1100	440
1	800	310

These values are based on a sheet (wall) thickness of 10 mm of soft, low-carbon steel (St37). 1 kgf equals 1 daN.
Forces will be lower when thinner steel sheets/walls are used. This is indicated in the graph below. In this manual we intentionally use the term pull force; the official term in mechanics is “normal force”.
Shear force is surface-dependent.





7. Manufacturer Contact Details

Manufacturer:
SAV Walker Hagou BV
Industrieweg 9
5531 AD Bladel
The Netherlands
Tel: +31 497 383835
Fax: +31 497 382006
e-mail: info@sav-workholding.com

8. Sample Measurement Sheet

MEASUREMENT SHEET FOR CONTROLOCK				
Project :			**Temperature _____ °C**	
	Pull force **Required :_____kgf**		**Shear force** **Required :_____kgf**	
Magnet serial number	**Value reading unit (kgf)**	**Actual force = reading value x2 (kgf)**	**Value reading unit (kgf)**	**Actual force = reading value x2 (kgf)**
Date:	**Performed by:**		**Approved by:**	